ROLAND

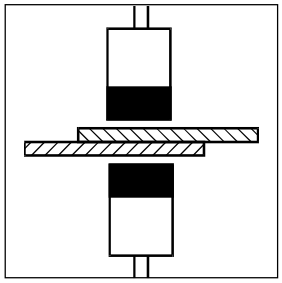
PRODUCT PROGRAM DOUBLE SHEET CONTROL

Double Sheet Detector
R 1000 Series I 10
Inductive principle - microcontroller based

NOW AVAILABLE:

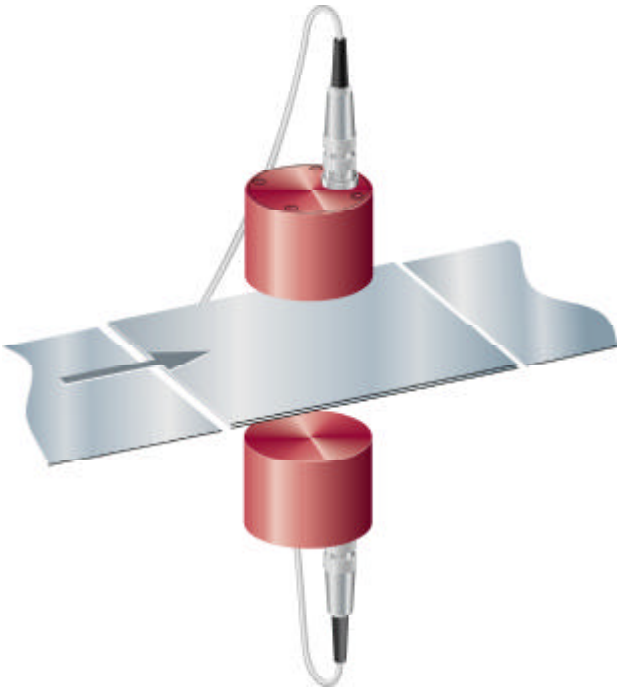
> **Panel mount**
> **Fieldbus technology**

Non contact double sheet control
of ferrous and non-ferrous materials



6 interchangeable pairs of sensors for double sheet control:
ferrous materials 0.01 up to 5.0mm (0.2in) and
non-ferrous materials 0.01 up to 15mm (0.6in) according to material type.

- Programmable for 255 different sheet thicknesses and materials
- Calibration with a teach-in procedure
- Digital display of sheet thickness and operational parameters
- Monitoring of over gauge and under gauge limits
- Monitoring of operating voltage and sensor gap
- Opto coupled 11-Bit PLC input interface
- Selectable interfaces:
  - Data communication via optional opto coupled RS 232 interface (download)
  - Relay or opto coupled output for under gauge, nominal gauge, over gauge and enable



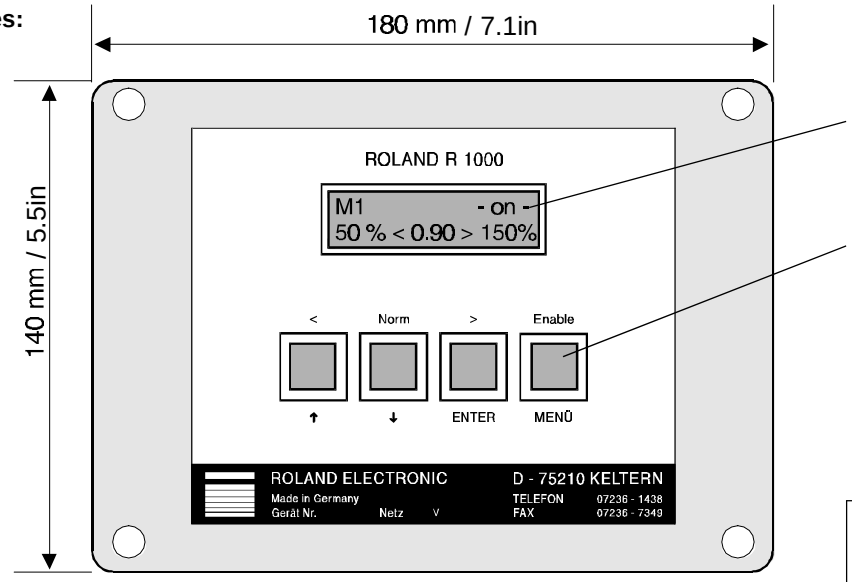
WARNING! These devices do **NOT** include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. Never use these products as sensing devices for personnel protection. Their use as a safety device may create an unsafe condition which could lead to injury or death.

DOUBLE SHEET DETECTOR I 10

Description of operating mode:
When sheets are fed automatically, two or more sheets may be fed inadvertently into a processing machine. This can damage tools, cause loss of production or result in expensive repairs. The double sheet detector I 10 can reliably prevent this from occuring.

Function:
The double sheet detector I 10 is based on the eddy current principle. It monitors the sheets without any contact and does not exert any magnetic force. The transmitter generates an electromagnetic field, which results in eddy currents in the sheet to be measured. The eddy current losses dampen the magnetic field. These losses are evaluated in the receiver and translated into thickness values. Corresponding to the pre-set limits under gauge, nominal gauge and over gauge signals are generated. One pair of sensors can be connected to the control unit. An optional Sensor Switch Box (SSB I10) is available to connect up to 4 pairs of sensors and address them sequentially. The control unit is available in three versions A, B and C with options as follows:

Special features:



LCD-Display
with 2 x 16 digits

Illuminated buttons to display visually the status of the outputs:
- 0-sheet (<)
- 1-sheet (Norm)
- 2-Sheets (>)
- Enable

Technical Data:

Operating voltage:	24V DC ± 4V
Power consumption:	< 17 W
Enclosure meets:	IP 65
Ambient temperature:	0 - 50°C (32° to 122°F)
Weight:	approx. 1,5 kg (3.3 lb)

Dimensions
Unit I10
Width: 180 mm (7.1 in)
Height: 140 mm (5.5 in)
Depth: 71 mm (2.3 in)

Diagnostics:
- Password protected system configuration
- Service function

Memory and signal inputs:

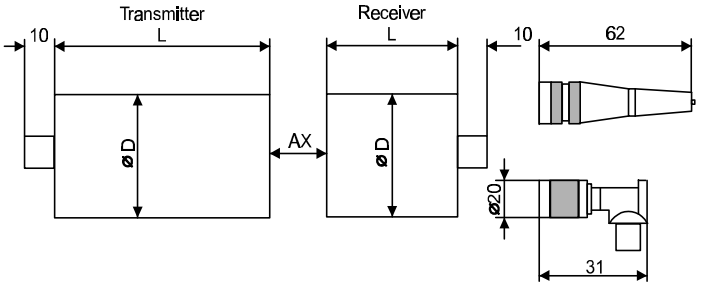
Version A: Memory for 255 parameter sets (thicknesses). Programming and addressing by push buttons.
Measurement start via control input
Version B: Memory for 255 parameter sets (thicknesses). Programming by push buttons
Addressing with 11 data inputs opto coupled 24 VDC with joint common
Version C: Memory for 255 parameter sets (thicknesses). Programming by push buttons
Addressing with 11 data inputs opto coupled 24 VDC with joint common
1 opto coupled RS 232 interface for bidirectional data communication with a PLC or a PC

Signal outputs	**Relay version (Version A and B):**	**Optocoupled version (Version B and C):**
Signal outputs:	dry two way contacts	Emitter and collector
Maximum switching voltage:	250 V AC	50 V DC
Maximum switching current:	1 A	150 mA
Maximum switching power:	240 W / 200 VA	100 mW

DOUBLE SHEET DETECTOR I 10

Mounting:
The sensors can be installed in either position: horizontally or vertically. Transmitter and Receiver should be aligned to each other face to face as the sketch below shows. Preferably, sensors should "stick out" when mounting in steel or plastic brackets. Use plastic for flush mounting. Recessed installation of the sensors is not recommended because dirt and swarf can collect on the sensor surface. Brackets made out of non-ferrous metals e.g. aluminium, reduce the sensor distances. For controlling double sheet in magnetic conveyors, see Sensor Data Sheet Series MS..S and ME..S.

Dimensions: S/E 28 - S/E 75

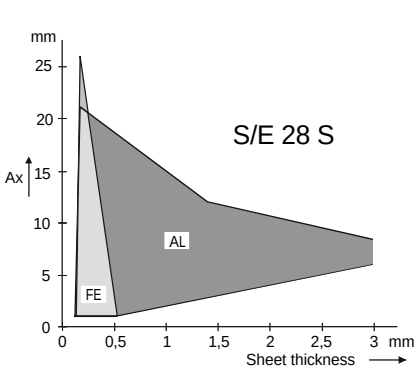


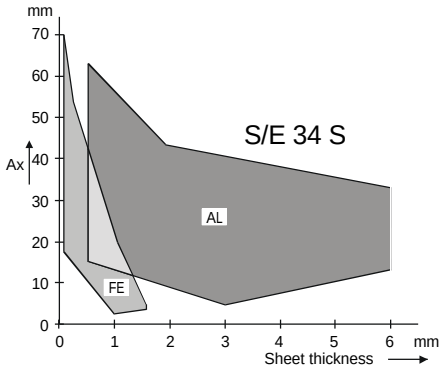
Technical Data:

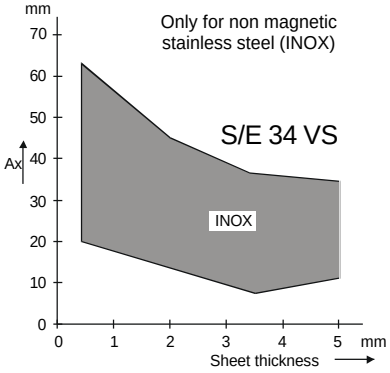
Pair of Sensor	Transmitter		Receiver		Weight (g)
Type	Dim. L	Dim. D	Dim. L	Dim. D	
S/E 28	65	28	45	28mm	280
S/E 34 / 34V	65	34	45	34mm	400
S/E 54	65	54	45	54mm	900
MS/ME 54 S	53	54	53	54mm	600/480

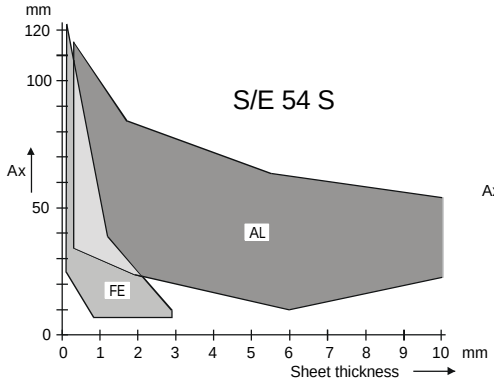
Ambient temperature	0 - 50°C (30° - 120°F)
Enclosure meets	IP 65
Sensor housing	Stainless Steel
Sensor surface	PVC plastic

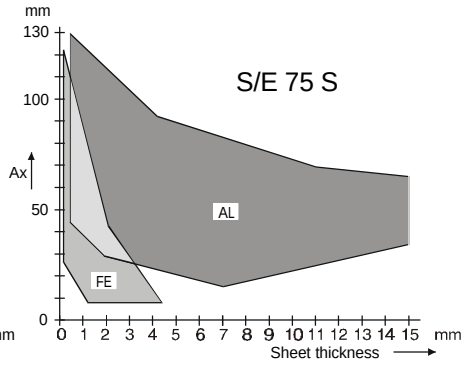
Sensor diagrams (measurement range = f (Ax, type of material))**:**
The shaded areas designate the maximum and minimum distances Ax between transmitter and receiver for a particular type of material and sheet thickness; respectively the maximum and minimum plate thickness to be controlled of a particular material for a given transmitter/receiver distance Ax. The designated values are standard values, variations are possible due to material differences and installations of the sensors. Special sensor types, e.g. for special materials, can be delivered on request.

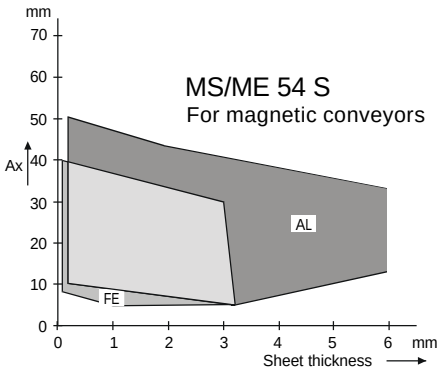








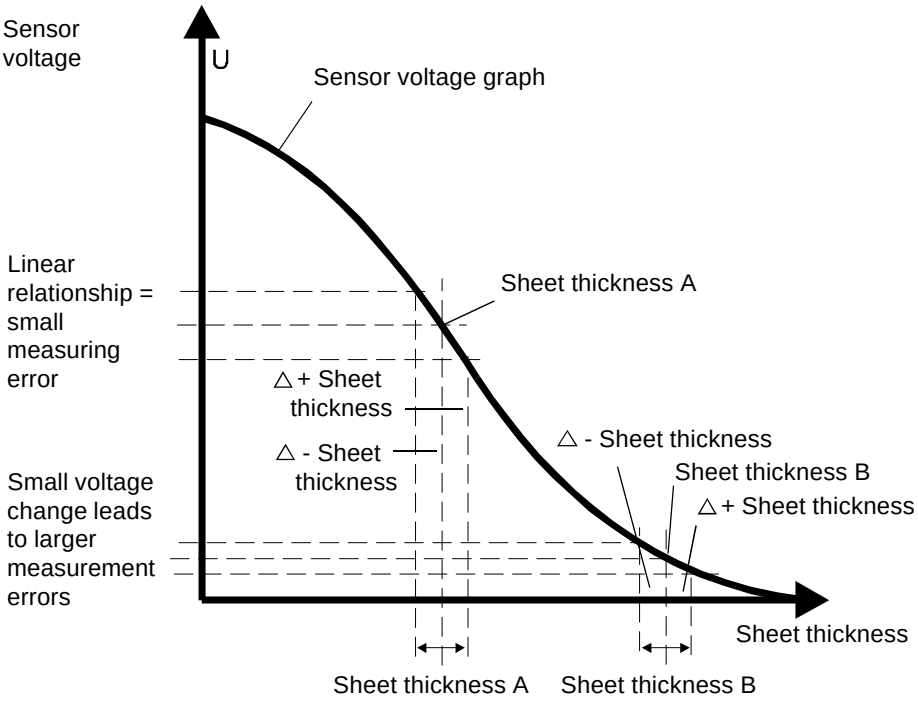




Other informations:
Measuring target: The area of the sheet to be monitored should be at least 3 times sensor diameter. In this case reliable double sheet control according to the conditions sketched out in the diagram above is provided.
Switching time: For the total switching time of the outputs (with full coverage of the measuring target) add 20 ms to the selected measurement time (2ms, 15ms, 25ms and 80ms).

DOUBLE SHEET DETECTOR I 10

Explanation of measuring principle:
The voltage generated in the receiver depends among other factors on the following parameters: sheet thickness, electrical conductivity, sensor frequency, sensor size, sensor gap, type of mounting brackets.
Therefore, it is not possible to formulate a simple relationship between sheet thickness and voltage. The general relationship is depicted by the typical "S" - graph. This means that there are approximately linear relationships in the middle of the the thickness range of each sensor, resulting in high resolutions. This should be considered when selecting the appropriate sensor.



Order data:
Double Sheet Detector I 10

I10 - A - R	Manual operation	Relay version	Terminals
I10 - B - O	Control via PLC	Opto coupled version	Terminals
I10 - B - R	Control via PLC	Relay version	Terminals
I10 - C - O	Download via PLC	Opto coupled version	Terminals

Sensors: S 28 S, S 34 S, S 34 VS, S 54 S, S 75 S, E 28 S, E 34 S, E 34 VS, E 54 S, E 75 S
MS 54 S, ME 54 S

Sensor cable: **(for S/E-Sensors)**
KOISE, KOISS
Standard length 2m; Cable up to 20m made to order; for longer cables enquire

KOISE-W, KOISS-W Right angle receptacle;
Standard length 2m; Cable up to 20m made to order; for longer cables enquire

(for MS/ME-Sensors)
KOIME, KOIMS
Standard length 2m; Cable up to 20m made to order; for longer cables enquire

KOIME-W, KOIMS-W Rigth angle receptacle;
Standard length 2m; Cable up to 20m made to order; for longer cables enquire

Spec. accessoires:

SSB I10:	Sensor Switch Box
VCIS - SSB I:	Connection cable between I10 and SSB I10
SCB I10:	Sensor Connection Box for MS 54 S / ME 54 S

Technische Änderungen und Irrtümer vorbehalten · Subject to technical modification and error · 3.8.9.

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